REMARKS

Claim 1 has been amended in this response. Claims 1-15 remain in the application. No new matter has been added. Reconsideration of the application is respectfully requested.

Claims 4, 10, and 13 have been deemed allowable if rewritten in independent form. The applicant appreciates the examiner's action concerning those claims.

In the following text, specific references to the present application and the prior art are made using the notation "x:y", where "x" denotes the page or column number, and "y" indicates the line number, within the document being discussed.

Amendment of Claim 1

Claim 1 has been amended in response to the examiner's assertion that the lack of a connector was not claimed explicitly, and that the words previously used in the claim as defined in the specification did not require this limitation. (Page 7 of the Office Action.) Although the applicant respectfully disagrees with that assessment, claim 1 has been amended to further clarify that a proximate end of the electrical circuit substrate is "coupled via solder *directly* to the target circuit board *in the absence of a intervening connector.*" (Amended claim 1; emphasis supplied). This amendment is supported in both the drawings (please see FIG. 3) and in the specification, which indicates that solder points 380 on rigid circuit board 310 are soldered to pads 340 on target circuit board 120." (5:4 – 5:5) In view of this amendment, the applicant respectfully requests reconsideration of that claim.

Claim Rejections Under 35 U.S.C. 103(a)

The examiner has rejected claims 1-3, 5-9, 11-12 and 14-15 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 4,087,146 ("Hudson") in view of U.S. Patent Number 6,261,104 ("Leman") and U.S. Patent Number 5,692,911 ("Webster"). In light of the current amendment to claim 1, the applicant respectfully traverses.

As a general comment, the examiner has stated that "one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references." (Page 6 of the Office Action.) However, arguments against combining certain references were presented in earlier responses, and are repeated below. In addition, the applicant has highlighted significant differences between the elements of the

claims and those of the prior art which the examiner believes are equivalent. Such comparisons are valid in arguing against rejections under 35 U.S.C. 103, as each element of the claims being examined must be present in one of the references.

With respect to the rejections, Hudson discloses a connector assembly 10 (as shown in FIG. 1 of Hudson) "for effecting electrical connection between a flat flexible cable and a flat surface, such as provided by the pads of a printed circuit board." (Abstract) As stated in earlier responses, the structure claimed in the present invention eliminates any necessity for such a connector. The fact that the termination circuit of the current application, as recited in claim 1, is "mounted substantially at the proximate end of the electrical circuit substrate" is allowed precisely because *the electrical circuit substrate has no connector at the proximate end.* Instead, the proximate end of the electrical circuit substrate is "coupled via solder directly to the target circuit board in the absence of a intervening connector" (amended claim 1). Locating the termination circuit at the proximate end (as recited in claim 1) in the place where a connector would normally reside allows better signal reflection characteristics than are possible when a connector is being used to connect the two boards (5:15 – 5:27).

Specifically regarding the examiner's rejection of claim 1, the applicant believes the examiner has not provided enough information in the Office Action to indicate which structure of FIG. 1 of Hudson serves as the electrical circuit substrate. The examiner refers to "Fig. 1, substrate to which 44 is connected" (page 2 of the Office Action). However, the cable 44 is connected both to the connector assembly 10 and a vertically-oriented circuit board. Nonetheless, neither structure serves as the electrical circuit substrate of the present invention.

Assuming the examiner views the connector assembly 10 as the electrical circuit substrate of claim 1, this is exactly the type of structure that claimed embodiments of the present invention seek to eliminate to allow the termination circuit to reside substantially at the proximate end, as positively recited in amended claim 1. In other words, the connector assembly 10 is, in short, a connector, and not an electrical circuit substrate, such as a rigid circuit board or a flex circuit (3:25 – 4:3 of the present application).

Assuming the examiner sees the vertically-oriented circuit board shown in FIG. 1 of Hudson as the electrical circuit substrate, several problems negate such a view. For example, that circuit board does not have "a proximate end being coupled via solder directly to the target circuit board in the absence of a intervening connector" (amended claim 1), the target

circuit board being the printed circuit board 12 of FIG. 1 of Hudson. Instead, the two boards of Hudson are connected by the connector assembly 10, a flat cable 44, and a second connector (not labeled) on the surface of the vertical circuit board. Also, due to the flexible nature of the cable 44, the vertically-oriented board of FIG. 1 is not held "substantially perpendicular to the target circuit board," as required in claim 1, but is allowed to move freely with respect to the printed circuit board 12 within the constraints imposed by the cable 44.

Additionally, the examiner collectively identifies the end of cable 44, contacts 50, and flanges 28 and 30, as a "termination circuit" (claim 1). However, as stated in previous office action responses, such a structure is not equivalent to the termination circuit 210 of the present invention, as shown in FIG. 4 of the application, and as recited in claim 1. Termination circuits are commonly utilized to mitigate deleterious transmission line effects, such as signal reflections, in signal lines (1:18 – 1:20). The specific embodiment shown in the specification, for example, employs a parallel resistor-capacitor configuration for each signal line (4:21 – 4:24). Hudson makes no reference to nor infers any such circuits, nor does Hudson use the term "termination circuit" at all. Instead, the cable 44 and the contacts 50 are mere electrical connections that have no termination properties. Additionally, flanges 28 and 30 appear to be extensions of the housing member 18 of the connector assembly 10, which is made of insulating material (2:27 – 2:51), and thus cannot be a circuit at all. As a result, *Hudson does not disclose a termination circuit* as recited in claim 1.

Assuming, instead, that the RC circuit referred to in Leman is meant to disclose the termination circuit of the present invention, that RC circuit does not anticipate the termination circuit of the application, either. Leman discloses a "termination circuit, for example, an RC circuit mounted to a printed circuit board that connects to the upper riser connector 32b of the upper riser card 30b..." (5:38 – 5:41). While such termination circuits are well known for their use on printed circuit boards in "prevent[ing] signal reflections" (5:44), Leman discloses nothing more than that. Leman certainly does not disclose "a termination circuit mounted substantially at the proximate end of the electrical circuit substrate." (Claim 1) In fact, Leman does not specifically disclose the location of the RC circuit, other than to say it is "mounted to a printed circuit board" (5:39 – 5:40).

Apparently, the examiner is attempting to equate the electrical termination circuit disclosed in Leman with the end of cable 44, contacts 50, and flanges 28 and 30 of Hudson,

which only make up a physical connection mechanism, as stated above, not a termination circuit. The examiner seems to be using the Leman RC circuit to address the signal reflection issue, and the cable, contacts, and flanges of Hudson to address the location of the termination circuit of the present invention at the proximate end of an electrical circuit substrate, by calling both structures "termination circuits." However, these two structures simply cannot be equated; they don't represent the same structure, and they don't perform the same function. One is a set of mere electrical connections, the other is a termination circuit, and one is nothing like the other.

Furthermore, the fact that the termination circuit of the current application is "mounted substantially at the proximate end of the electrical circuit substrate" is allowed precisely because *the electrical circuit substrate has no connector at the proximate end.* Instead, the electrical circuit substrate is "coupled via solder directly to the target circuit board in the absence of a intervening connector" (amended claim 1). Locating the termination circuit at the proximate end in the place where a connector would normally reside allows better signal reflection characteristics than are possible when a connector is being used to connect the two boards (5:15 – 5:27). Oppositely, the connector assembly 10 of Hudson will not allow the positioning of a termination circuit near the point where the contacts 50 of the cable 44 and the printed circuit board 30 meet. As can be seen in FIG. 4 of Hudson, the small size of the contacts 50 are not likely to allow the attachment of any termination circuit components, such are resistors or capacitors. Furthermore, the contacts 50 touch the printed circuit board 12 using its "arcuate surface engaging portion 54" (2:58), which resides well underneath the connector assembly 10, as shown in FIG. 5, and thus a significant distance from any point at which any termination circuit may be located. In other words, *Hudson teaches away from using a termination circuit that is "mounted substantially at the proximate end of the electrical circuit substrate."* As a result, the applicant believes that the combination of the structure of Hudson with the termination circuit of Leman is improper, and reconsideration of the rejection is respectfully requested.

Further, the examiner utilizes Webster to show an "electrical circuit substrate being coupled via solder to the target circuit board." (Page 3 of the Office Action.) Webster discloses a folded, flexible electrical test fixture 100 that is soldered between an integrated circuit and a circuit board in order to allow better access to test points of the integrated circuit (Abstract). However, as can be seen in FIG. 2, the *center* of the test fixture 100 is soldered to

the target circuit board, not at a *proximate end* of the fixture 100, as required in claim 1 of the current application. This difference is significant, as embodiments of the present invention allow connection of the electrical circuit substrate and the target circuit board to consume much less board space that the text fixture of Webster, as well as the structures cited in Leman and Hudson. (Please see 5:28 – 6:7 of the present application.) This space savings results from the proximate end of the substrate and the target circuit board being soldered together directly, as recited in amended claim 1.

As a result, based on the arguments above, the applicant believes that claim 1, as amended, is not anticipated nor made obvious by Hudson in view of Leman and Webster. Therefore, the applicant believes that claim 1 is allowable.

Additionally, since dependent claims 2-15 all depend from independent claim 1, and the applicant believes that claim 1 is allowable, the applicant believes that claims 2-15 are also allowable, as each incorporates the elements recited in claim 1.

Specifically concerning claims 2 and 9, the examiner believes that FIG. 1 of Hudson discloses the electrical circuit substrate as either a rigid circuit board (page 3 of the Office Action) or a flex circuit (page 4 of the Office Action). The applicant respectfully disagrees. Neither the connector assembly 10 nor the cable 44 shown in FIG. 1 of Hudson qualifies as either a rigid circuit board or a flex circuit, as is generally known in the industry. In fact, no flex circuits are shown in the Hudson disclosure, and the only rigid circuit board displayed (other than the target circuit board 12) is the vertically-oriented printed circuit board of FIG. 1, which was shown above not to qualify as the electrical circuit substrate of claim 1. Therefore, the applicant believes that claims 2 and 9 are allowable. In addition, since claims 3 through 8 depend from claim 2, and claims 10 through 15 depend from claim 9, the applicant believes that those claims are allowable, as well.

Regarding claims 3 and 12, the examiner indicates that Hudson "discloses a guide pin (42) connected to the rigid circuit board" (page 4 of the Office Action) or "to the flex circuit" (page 5 of the Office Action). However, the conventional locking securing means 42 (e.g., screws or bolts) of Hudson are not connected to a rigid circuit board or a flex circuit, but the connector assembly 10, which, as shown above, does not qualify as either. (Please see FIG. 1 of Hudson.) As a result, the applicant believes that claims 3 and 12 are again allowable.

Concerning claims 5 and 14, the examiner believes that the "termination circuit" he has identified in Hudson in FIG. 1 (i.e., the end of cable 44, contacts 50, and flanges 28 and

30) discloses an active electrical component (pages 4 and 5 of the Office Action), as required by those claims. However, contrary to that assertion, there is no mention of any electrical components, active or passive, either in the figures or anywhere else in the Hudson patent. Additionally, none of Hudson, Leman, or Webster discuss an active electrical component, such as a transistor. (Please see 4:17 – 4:20 of the present application.) Thus, the applicant believes claims 5 and 14 are again allowable.

Regarding claim 6, the examiner believes that FIG. 1 of Hudson "discloses at least one electrical signal wire (44) may be connected to either side of the rigid circuit board" (page 4 of the Office Action). Regardless of which structure the examiner identified as the rigid circuit board, no indication is made in Hudson regarding electrical signal wires being connected to either side of any structure. Thus, claim 6 should also be allowed.

With respect to claim 7, the examiner states on page 4 of the Office Action that Hudson discloses "a coaxial signal wire (44) having a shield electrically coupled to the rigid circuit board." However, there simply is no reference at all in Hudson to a coaxial signal wire or a shield. As a result, claim 7 is allowable in view of the cited references.

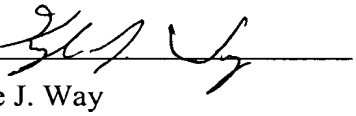
Claim 11 is similarly allowable, as no mention is made in Hudson of a socket connected to a flex circuit, as cited in that claim, contrary to the examiner's assertion of such a disclosure (page 4 of the Office Action). A socket, such as the socket 650 shown in FIG. 6, receives a mating structure such as the plug 660, for making a secure, solderless connection. Such a structure is well-known in the art. The same is true regarding claim 15, which requires a rigidized flex circuit (page 5 of the Office Action); no such element is proposed in Hudson. Thus both claims 11 and 15 should be allowable.

The examiner has also rejected claim 8 under 35 U.S.C. 103(a) as being unpatentable over Hudson in view of Leman and Webster. The applicant respectfully traverses. As discussed above, since no combination of Hudson, Leman and Webster discloses the requirements of either claim 1 or 9 concerning the electrical circuit substrate or the termination circuit, and claim 8 incorporates those limitations, the applicant believes that claim 8 is allowable.

Conclusion

As a result of the previous discussion, it is believed that claims 1-15 comply with the provisions of 35 U.S.C. 102 and 103. Reconsideration and favorable action are respectfully requested.

Respectfully submitted,

by 

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